Sokoban

10.13.2019

Internal Stakeholders

Project Managers : Ajay Gupta, Parshva Shah

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Project Overview

This project aims to re-imagine the popular game Sokoban with a different approach on the types of puzzles and the mechanics used to solve said puzzles. The game will feature a variety of levels, with a different assortment of puzzles with varying difficulty.

Goals

1. An implementation of Sokoban in Pygame
2. An interactive puzzle system
3. Creating an interesting game we are proud of
4. A fully playable, error-free game

Specifications

The game will be created in Python using Pygame. Sokoban only supports movement in the X or the Y direction, thus the game will be built using a 2D top down level approach. The main character will move along a Cartesian plane where keyboard inputs (traditional movement keys) will allow the user to move according to a restricted set of directions {(1,0), (0,1), (-1,0), (0,-1)}. Similar to Sokoban, diagonal movement is not allowed. The playable interface will be composed of various sprites, along with level designs which will be created from scratch. Each level design will vary, such as the types of puzzles and their difficulty, meaning the player has a unique experience every level. The game and level design will be similar to Sokoban in the sense that all objects must be pushed by the player to a

certain area in order to advance. The types of puzzles and difficulty will be at a reasonable skill level such that each level does not appear to be impossible. The user may be given a set of restrictions on certain levels to complete all of the puzzles (ex. time limit, move limit, etc.). If the user is not able to complete the level under the restrictions, they will not be able to move onto the next level and will have to retry the current level. Users will be given an unlimited amount of attempts to solve each level, and the user can complete the game by finishing all of the levels.

Project Scope

i. Must-have features:

1. Functional 2D game with vertical and horizontal movement
2. Levels which contain unique sets of puzzles, providing some difficulty
3. A clear goal such that the player is not wandering around aimlessly

ii. Good-to-have Features:

1. Sound
2. Level transitions
3. Implementation of level restrictions to provide a higher degree of difficulty

iii. Out of Scope Features

1. Leaderboards
2. Connection to a multiplayer platform
3. Large set of levels
4. Randomized level generator
5. Dedicated level-creator for players

Group Tasks

1. Envision the creation of the game.
2. Write the project plan.
3. Review game design.
4. Begin presentation construction.
5. Design core game mechanics.
6. Create a standard design template for all levels.
7. Design unique levels and its components (interface objects, puzzles).
8. Combine game mechanics and level construction to create a playable version of the game.
9. Create a pleasant user experience (sound, level transition).
10. Finalize and fix any small bugs.

Communication

GitHub will contain the master code and each member will have their own branch to work on the tasks they're assigned.

The main form of communication for the team is a Discord channel where members can share their progress, errors, new ideas, and allow audio communication.

Deliverables

A project plan that gives an overview of the project and work distributions for each internal stakeholder. It allows group members to keep track of their tasks and deliver them on time.

A design review that provides detail on the development plan, strategy, resources and assistance for members completing their tasks. The design review would help stakeholders see potential complications during game development and the group's plan on resolving them.

A documentation from each member that details their contributions to the project.

The main deliverable is the project or the game itself. This game is a different interpretation of Sokoban that introduces a different puzzle system from the original.

A presentation for the game that guides consumers on how to install and play the game.

Milestones

I. Prototype

The first playable version (or draft) of the game has been finished. The layout of the game is completed. This version of the game will feature placeholder graphics, characters, and levels which will be replaced with the final graphics in later versions.

Expected Date: October 26, 2019

II. Beta

All of the expected features of the game have been completed. The game is fully playable and ready for testing. The game is still not completed yet since it has not yet been tested for minor bugs.

Expected Date: November 2, 2019

III. Final Project

The game is completed with minimal to no bugs and is ready for release. Every component of the project is completed and fully tested.

Expected Date: November 16, 2019

IV. Release

The game is uploaded on GitHub and ready for consumers to play.

Expected Date: November 17, 2019

Protocols, Risks and Limitations

With any project, there will always be unseen circumstances which can impact the intended timeline. While tasks will be split fairly, if a group member falls behind with one of their tasks, the rest of the team will collectively work on that task to stay as up-to-date as possible. It is the responsibility of that group member to let the rest of the team know that he/she needs help with their work.

We will implement a three-strike system. If the majority of the group decides on the time/date to either meet in person, or through Discord, it is assumed that everyone will do their best to show up for the meeting. If a group member fails to show up for said meeting, they will receive a strike, and after he/she collects three, the rest of the group will discuss the actions that will proceed.

If one group member were to drop the course, their incomplete work will be split evenly amongst the remaining members. Similarly, if a group member does not show up on any presentation days, the slides would be split amongst the members that are present.

Timeline

Task	Deadline
Project Plan	October 12, 2019
Design Review	October 19, 2019
Game Prototype	October 26, 2019
Level Design	November 2, 2019
Graphic Design	November 2, 2019
Sound Design	November 2, 2019
Mechanic Design	November 2, 2019
Game Beta	November 2, 2019
Game Testing	November 3, 2019
Documentation	November 9, 2019
Final Testing	November 15, 2019
Final Project	November 16, 3019
Game Presentation	November 19, 2019/November 26, 2019

Work Breakdown Structure

Shion : Puzzle Design, Item Interactions, Graphic Design

Kester : Level Design, Level Interactions, Sound Implementation

Bingbing : Graphic Design, Level Design, Quality Control

Ajay : Co-project Manager, Mechanic Design, Bug Testing, Player Movement

Parshva : Co-project Manager, Mechanic Design, Bug Testing, Player Interaction

Addendum

Parshva : My role in creating this project plan was writing the specifications of the project, creating the project scope, and specifying the protocols, risks, and limitations. When creating the specifications, I wanted to elaborate on how I view a functional Sokoban re-imagination, and described all the components and tasks that would have to work in conjunction for it to happen. To create the project-scope I had to consider realistic goals and features that we could implement given the time frame, as well as features that I know will not be completed by the deadline, but could be a great addition to the game if time permitted. Finally, as most group projects, a detailed timeline is very difficult to follow, thus having a set of steps to follow if we were to ever fall behind is essential. I wanted to create a set of guidelines that are fair to all members, and puts the group in a position to succeed no matter the circumstance.

Ajay : My contribution to this project plan included assisting with details and editing statements throughout the project plan. I contributed specific additions to topics such as the project overview, goals, specifications, project scope, and group tasks. When assisting with the creations of these topics, I added points that may have been missed or that I felt should have been included. I also had to ensure that everything I was including was reasonable for our team to create. Along with this I also proofread the topics in order to ensure that everything stated was accurate and was in accordance with what the team had in mind.

Kester : My contribution to this project plan encompassed writing the structure and providing ideas and content to the project plan, such as the content of 'Protocol, Risks, and Limitations' and the draft versions of 'Communication', 'Project Overview', and 'Goals'. Additionally, I proofread the project plan for grammar mistakes and made sure the writing flowed smoothly (whether it be sentence restructuring or word choice).

Bingbing : My contribution to the project plan consists of listing the project deliverables, milestones, work distributions and deadlines. The deliverables are

organized into the project components that we need to submit. Each component contains a short description on what it is about. The milestones I listed are the major development stages of the game and provided the details on what each stage of the game should feature. Every milestone also has an expected achievement date. The work deadlines that we planned is that each work must be completed two days before the corresponding project component is due. (For example, design review must be completed on Oct 19, 2 days before its due date.)

Shion : My main role in creating this project proposal was to divide tasks among all five members effectively and evenly. In order to get a complex work done in a given time, effective task management and allocation of tasks is very important. Therefore, I took everyone's strengths and weaknesses in terms of technical aspects into account so that we can maximize time efficiency. Also, I considered the complexity of each task when allocating so that all tasks are evenly divided among us. Lastly, I proofread the project proposal once again to make sure that all deadlines are feasible and all requirements in the marking scheme are completed.